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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,086	07/24/2003	Timothy Roy Block	ROC920030026US1	9970
30206	7590	12/02/2005	EXAMINER	
IBM CORPORATION ROCHESTER IP LAW DEPT. 917 3605 HIGHWAY 52 NORTH ROCHESTER, MN 55901-7829			NGUYEN, THUONG	
			ART UNIT	PAPER NUMBER
			2155	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/626,086	BLOCK ET AL.	
	Examiner	Art Unit	
	Thuong T. Nguyen	2155	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to application 10/626,086 filed 7/24/03. Claims 1-36 are pending and represent method, apparatus, system and computer program for cluster data port services for clustered computer system.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It's unclear how a signal bearing medium and bearing the program code.
4. Claim 36 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It's unclear how the transmission medium works.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 35 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The inventor fails to explain what is signal bearing medium means and how does it bear the program code?

7. Claim 36 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The inventor fails to explain how to do the transmission medium?

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-4, 6, 8-10, 12, 14-19, 21, 23-25, 27, 29-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Foster Patent No. 2002/0161,923 A1. Foster teaches the invention as claimed including method and system for reconfiguring a path in a communications network (see abstract).

10. As to claim 1, Foster teaches a method comprising:

establishing a cluster data port between the source node and a target node, the cluster data port configured to select among a plurality of connection paths between the source node and the target node, and to selectively switch over data flow from the target node to a backup target node (page 3, paragraph 24; Foster discloses that the method of established the connection between the source node and a destination node and configure a new path as the backup path to transmit data); and

communicating data from the source node to the target node using the cluster data port (page 2, paragraph 15; Foster discloses that the method of configured the routing devices for sending/receiving data between the source nodes and the destination nodes).

11. As to claim 2, Foster teaches that the method as recited in claim 1, wherein establishing the cluster data port includes establishing a plurality of logical connections between the source node and the target node, each logical connection configured to communicate data over a connection path among the plurality of connection paths (page 2, paragraph 17; Foster discloses that the method of established the paths through the network from the source nodes to the destination nodes including the re-identify paths when the topology of the network changes).

12. As to claim 3, Foster teaches that the method as recited in claim 2, wherein establishing the cluster data port includes exchanging between the source and target nodes network addresses associated with at least one of the source and target nodes (page 6, paragraph 39; Foster discloses that the method of established the path

component from the source node to the destination node and the path from the destination node to the source node using the same ports of the same interconnect fabric modules).

13. As to claim 4, Foster teaches that the method as recited in claim 2, wherein establishing the cluster data port includes registering a client that is resident on the source node with the cluster data port (page 4, paragraph 30; Foster discloses that the method of established the transmittal of virtual identifier for the register data communication of the source and destination nodes).

14. As to claim 6, Foster teaches that the method as recited in claim 1, wherein communicating data from the source node to the target node includes performing load balancing in the cluster data port to distribute the data among the plurality of connection paths (page 3, paragraph 24; Foster discloses that the method of performing load balancing by dynamically changing a path for the destination node).

15. As to claim 8, Foster teaches that the method as recited in claim 1, wherein the cluster data port is configured to communicate data between the source and target nodes according to a messaging protocol selected from the group consisting of an asynchronous messaging protocol and a synchronous messaging protocol (page 2, paragraph 16; Foster discloses that the method of centralized network manager and distributed network manager. Centralized network manager performs as the asynchronous protocol and distribution network manager performs as the synchronous protocol).

16. As to claim 9, Foster teaches that the method as recited in claim 1, further comprising, with the cluster data port, switching data flow from the target node to a backup target node in response to an inability to communicate with the target node (page 5, paragraph 35; Foster discloses that the method of creating a backup loops if there is no connection between each blocks as of the source and destination nodes).

17. As to claim 10, Foster teaches that the method as recited in claim 9, wherein switching data flow from the target node to the backup target node includes establishing a logical connection between the source node and the backup target node (page 3, paragraph 23; Foster discloses that the method of established the new path connection as the backup path between the source and destination nodes).

18. As to claim 12, Foster teaches that the method as recited in claim 9, wherein switching data flow from the target node to a backup node is initiated by the cluster data port (page 4, paragraph 28; page 3, paragraph 24; Foster discloses that the method of using the crosspoint switch to switch connect its source and destination ports and for the new port if the connection fails).

19. As to claim 14, Foster teaches that the method as recited in claim 1, further comprising communicating data from the target node to the source node using the cluster data port (page 3, paragraph 21; Foster discloses that the method of established paths through the network of routing devices by configuring the ports of the source node to a destination node).

20. As to claim 15, Foster teaches that the method as recited in claim 1, wherein the target node is remote from the source node, and wherein communicating data from the

source node to the target node includes communicating mirror data to support remote mirroring between the source and target nodes (page 4, paragraph 29; Foster discloses that the method of established the virtual identifier to indicated the data communication to one or more remote nodes between the source and remote destination nodes).

21. As to claim 16, Foster teaches an apparatus, comprising:

a memory (figure 1);

at least one processor (figure 3); and

program code resident in the memory and configured for execution on the at least one processor to implement a cluster data port for a clustered computer system of the type including a plurality of nodes, the cluster data port configured to support communication between a source node and a target node among the plurality of nodes, the cluster data port further configured to select among a plurality of connection paths between the source node and the target node, and to selectively switch over data flow from the target node to a backup target node (page 3, paragraph 24; Foster discloses that the apparatus of established the connection between the source node and a destination node and configure a new path as the backup path to transmit data).

22. As to claim 17, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to establish a plurality of logical connections between the source node and the target node, each logical connection configured to communicate data over a connection path among the plurality of connection paths (page 2, paragraph 17; Foster discloses that the apparatus of established the paths through the network

from the source nodes to the destination nodes including the re-identify paths when the topology of the network changes).

23. As to claim 18, Foster teaches the apparatus as recited in claim 17, wherein the cluster data port is configured to exchange between the source and target nodes network addresses associated with at least one of the source and target nodes (page 6, paragraph 39; Foster discloses that the apparatus of established the path component from the source node to the destination node and the path from the destination node to the source node using the same ports of the same interconnect fabric modules).

24. As to claim 19, Foster teaches the apparatus as recited in claim 17, wherein the cluster data port is configured to register a client that is resident on the source node (page 4, paragraph 30; Foster discloses that the apparatus of established the transmittal of virtual identifier for the register data communication of the source and destination nodes).

25. As to claim 21, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to load balance data communicated between the source and target nodes to distribute the data among the plurality of connection paths (page 3, paragraph 24; Foster discloses that the apparatus of performing load balancing by dynamically changing a path for the destination node).

26. As to claim 23, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to communicate data between the source and target nodes according to a messaging protocol selected from the group consisting of an asynchronous messaging protocol and a synchronous messaging protocol (page 2,

paragraph 16; Foster discloses that the apparatus of centralized network manager and distributed network manager. Centralized network manager performs as the asynchronous protocol and distribution network manager performs as the synchronous protocol).

27. As to claim 24, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to switch data flow from the target node to a backup target node in response to an inability to communicate with the target node (page 5, paragraph 35; Foster discloses that the apparatus of creating a backup loops if there is no connection between each blocks as of the source and destination nodes).

28. As to claim 25, Foster teaches the apparatus as recited in claim 24, wherein the cluster data port is configured to switch data flow from the target node to the backup target node by establishing a logical connection between the source node and the backup target node (page 3, paragraph 23; Foster discloses that the apparatus of established the new path connection as the backup path between the source and destination nodes).

29. As to claim 27, Foster teaches the apparatus as recited in claim 24, wherein the cluster data port is configured to initiate the switch of data flow from the target node to a backup node (page 4, paragraph 28; page 3, paragraph 24; Foster discloses that the apparatus of using the crosspoint switch to switch connect its source and destination ports and for the new port if the connection fails).

30. As to claim 29, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to support bidirectional communication between the

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source and target nodes (page 3, paragraph 21; Foster discloses that the apparatus of established paths through the network of routing devices by configuring the ports of the source node to a destination node).

31. As to claim 30, Foster teaches the apparatus as recited in claim 16, wherein the target node is remote from the source node, and wherein the cluster data port is configured to communicate mirror data from the source node to the target node to support remote mirroring between the source and target nodes (page 4, paragraph 29; Foster discloses that the apparatus of established the virtual identifier to indicated the data communication to one or more remote nodes between the source and remote destination nodes).

32. As to claim 31, Foster teaches a clustered computer system, comprising:

a plurality of nodes (page 2, paragraph 15; Foster discloses that the computer system of variety source, destination and new nodes); and

a cluster data port resident on at least one of the plurality of nodes and configured to support communication between a source node and a target node among the plurality of nodes, the cluster data port configured to select among a plurality of connection paths between the source node and the target node, and to selectively switch over data flow from the target node to a backup target node (page 3, paragraph 24; Foster discloses that the computer system of established the connection between the source node and a destination node and configure a new path as the backup path to transmit data).

33. As to claim 32, Foster teaches the clustered computer system as recited in claim 31, wherein the cluster data port is configured to select among the plurality of connection paths using a load balancing algorithm (page 3, paragraph 24; Foster discloses that the computer system of performing load balancing by dynamically changing a path for the destination node).

34. As to claim 33, Foster teaches the clustered computer system as recited in claim 31, wherein the cluster data port is configured to switch over data flow from the target node to the backup target node in response to an inability of the source node to communicate with the target node (page 5, paragraph 35; Foster discloses that the computer system of creating a backup loops if there is no connection between each blocks as of the source and destination nodes).

35. As to claim 34, Foster teaches the clustered computer system as recited in claim 31, wherein the target node is remote from the source node, and wherein the cluster data port is configured to communicate mirror data from the source node to the target node to support remote mirroring between the source and target nodes (page 4, paragraph 29; Foster discloses that the computer system of established the virtual identifier to indicated the data communication to one or more remote nodes between the source and remote destination nodes).

36. As to claim 35, Foster teaches program product, comprising:

program code configured to implement a cluster data port for a clustered computer system of the type including a plurality of nodes, the cluster data port configured to support communication between a source node and a target node among

the plurality of nodes, the cluster data port further configured to select among a plurality of connection paths between the source node and the target node, and to selectively switch over data flow from the target node to a backup target node (page 3, paragraph 24; Foster discloses that the program product of established the connection between the source node and a destination node and configure a new path as the backup path to transmit data); and

a signal bearing medium bearing the program code.

37. As to claim 36, Foster teaches the program product as recited in claim 35, wherein the signal bearing medium includes at least one of a recordable and a transmission medium (page 4, paragraph 26; Foster discloses that the program product of transmitted through the interconnected ports of the source and destination nodes).

Claim Rejections - 35 USC § 103

38. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

39. Claims 5, 7, 11, 13, 20, 22, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster, Patent No. 2002/0161923 in view of Modi, Patent No. 6,587,866 B1.

Foster teaches the invention substantially as claimed including method and system for reconfiguring a path in a communication network (see abstract).

40. As to claim 5, Foster teaches that the method as recited in claim 4. Foster fails to teach the limitation wherein registering the client comprises identifying to the data cluster port at least one callback function associated with the client, wherein the cluster data port is configured to notify the client of a data port event by calling the callback function.

However, Modi teaches method for distributing packets to server nodes using network client affinity and packet distribution table (see abstract). Modi teaches the limitation wherein registering the client comprises identifying to the data cluster port at least one callback function associated with the client, wherein the cluster data port is configured to notify the client of a data port event by calling the callback function (col 5, lines 17-26; Modi discloses that the method of using the callback function by the path manager).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that when the status of a path changes, if a new path comes up or remove, the system would get back to the original setup. One would be motivated to do so to secure the interconnection with the redundant pathways.

41. As to claim 7, Foster teaches that the method as recited in claim 1. Foster fails to teach the limitation wherein each connection path comprises a TCP connection.

However, Modi teaches the limitation wherein each connection path comprises a TCP connection (col 5, lines 40-46; Modi discloses that the method of established the connection path using TCP connection).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that the system using the TCP connection would be faster. One would be motivated to do so to ensures that packets belonging to the same TCP connection are sent to the same server instance.

42. As to claim 11, Foster teaches that the method as recited in claim 9. Foster fails to teach the limitation comprising notifying a client of the cluster data port service of the inability to communicate with the target node, wherein switching data flow from the target node to a backup node is performed in response to initiation of a cluster data port failover by the client.

However, Modi teaches the limitation wherein notifying a client of the cluster data port service of the inability to communicate with the target node, wherein switching data flow from the target node to a backup node is performed in response to initiation of a cluster data port failover by the client (col 5, lines 28-39; Modi discloses that the method of switching to the backup secondary interface node if the system experienced the failover).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that a backup secondary node is able to take its place without the failure being visible to clients. One would be motivated to do so to allows a backup interface node to take over for an interface node that fails.

43. As to claim 13, Foster teaches that the method as recited in claim 1. Foster fails to teach the limitation comprising, with the cluster data port, resetting a logical

connection between the source node and the target node in response to an inability to communicate with the target node.

However, Modi teaches the limitation wherein with the cluster data port, resetting a logical connection between the source node and the target node in response to an inability to communicate with the target node (col 8, lines 26-41; Modi discloses that the method of ensures that the configuration data will be present if the sever fails with configuration data).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that the system would be more reliable. One would be motivated to do so to ensures the connection of the source and destination nodes.

44. As to claim 20, Foster teaches the apparatus as recited in claim 19. Foster fails to teach the limitation wherein the cluster data port is configured to receive from the client at least one callback function associated with the client during registration of the client, wherein the cluster data port is configured to notify the client of a data port event by calling the callback function.

However, Modi teaches the limitation wherein the cluster data port is configured to receive from the client at least one callback function associated with the client during registration of the client, wherein the cluster data port is configured to notify the client of a data port event by calling the callback function (col 5, lines 17-26; Modi discloses that the apparatus of using the callback function by the path manager).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that when the status of a path changes, if a new path comes up or remove, the system would get back to the original setup. One would be motivated to do so to secure the interconnection with the redundant pathways.

45. As to claim 22, Foster teaches the apparatus as recited in claim 16. Foster fails to teach the limitation wherein each connection path comprises a TCP connection.

However, Modi teaches the limitation wherein each connection path comprises a TCP connection (col 5, lines 40-46; Modi discloses that the apparatus of established the connection path using TCP connection).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that the system using the TCP connection would be faster. One would be motivated to do so to ensures that packets belonging to the same TCP connection are sent to the same server instance.

46. As to claim 26, Foster teaches the apparatus as recited in claim 24. Foster fails to teach the limitation wherein the cluster data port is further configured to notify a client of the cluster data port of the inability to communicate with the target node, and wherein the cluster data port is configured to switch data flow from the target node to a backup node in response to initiation of a cluster data port failover by the client.

However, Modi teaches the limitation wherein the cluster data port is further configured to notify a client of the cluster data port of the inability to communicate with the target node, and wherein the cluster data port is configured to switch data flow from the target node to a backup node in response to initiation of a cluster data port failover

by the client (col 5, lines 28-39; Modi discloses that the apparatus of switching to the backup secondary interface node if the system experienced the failover).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that a backup secondary node is able to take its place without the failure being visible to clients. One would be motivated to do so to allows a backup interface node to take over for an interface node that fails.

47. As to claim 28, Foster teaches the apparatus as recited in claim 16. Foster fails to teach the limitation wherein the cluster data port is configured to reset a logical connection between the source node and the target node in response to an inability to communicate with the target node.

However, Modi teaches the limitation wherein the cluster data port is configured to reset a logical connection between the source node and the target node in response to an inability to communicate with the target node (col 8, lines 26-41; Modi discloses that the apparatus of ensures that the configuration data will be present if the sever fails with configuration data).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that the system would be more reliable. One would be motivated to do so to ensures the connection of the source and destination nodes.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuong T. Nguyen whose telephone number is 571-272-3864. The examiner can normally be reached on 7:30AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on 571-272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thuong T Nguyen
Patent Examiner/Art Unit 2155



SALEH NAJJAR
SUPERVISORY PATENT EXAMINER